

Listing of Claims

1. (Original) An apparatus for measuring total organic carbon in an aqueous solution, comprising:
 - a) an electrochemical cell comprising: i) a diamond-film electrode; ii) a reference electrode; and iii) a counter electrode; and
 - b) one or more carbon dioxide sensors, including at least one gas-phase sensor.
2. (Original) The apparatus of claim 1 wherein the diamond-film electrode is doped with a conductivity inducing material.
3. (Original) The apparatus of claim 1 wherein the gas-phase sensor is a tunable diode laser spectrometer.
4. (Original) The apparatus of claim 1 further comprising an aqueous-phase carbon dioxide sensor.
5. (Original) The apparatus of claim 4 wherein the aqueous-phase sensor is an ion-selective electrode.
6. (Original) The apparatus of claim 2 wherein the conductivity inducing material is boron.
7. (Original) A method for measuring total organic carbon in an aqueous solution, the method comprising:
 - a) providing an electrochemical cell comprising of: i) a diamond-film electrode; ii) a reference electrode; and iii) a counter electrode;
 - b) immersing the electrochemical cell of step a) into the aqueous solution;
 - c) applying a positive potential to the diamond-film electrode, the positive potential being sufficient to oxidize organics in the solution, thereby producing water and carbon dioxide;
 - d) measuring the amount of carbon dioxide produced in step c) using one or more carbon dioxide sensors, including at least one gas-phase sensor; and

- e) determining the amount of total organic carbon in the solution, the amount of total organic carbon being proportional to the amount of carbon dioxide measured in step d).
- 8. (Original) The method of claim 5 wherein the gas-phase sensor is a tunable diode laser spectrometer.
- 9. (Original) The method of claim 5 wherein the diamond-film electrode is doped with a conductivity inducing material.
- 10. (Original) The method of claim 9 wherein the conductivity inducing material is boron.
- 11. (Original) The method of claim 5 wherein the positive potential is in the range of about 2-2.5 volts.
- 12. (Currently Amended) A method for measuring total organic carbon in an aqueous solution, the method comprising:
 - a) providing an electrochemical cell comprising of: i) a diamond-film electrode; ii) a reference electrode; and iii) a counter electrode;
 - b) immersing the electrochemical cell of step a) into the aqueous solution;
 - c) applying a positive potential to the diamond-film electrode, the positive potential being sufficient to oxidize organics in the solution, thereby producing water and carbon dioxide;
 - d) measuring the amount of carbon dioxide produced in step c) using ~~one~~ two or more carbon dioxide sensors, including at least one gas-phase sensor, and at least one aqueous-phase sensor; and
 - e) determining the amount of total organic carbon in the solution, the amount of total organic carbon being proportional to the amount of carbon dioxide measured in step d).
- 13. (Original) The method of claim 12 wherein the aqueous-phase sensor is an ion-selective electrode.